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Technical activity from April 1 through June 30, 1965 was concentrated in behavior analysis and guidance program development. The behavior analysis involved identifying 1,051 jobs as candidates for inclusion in the training program and grouping them into 30 sub-families on the basis of task similarities. Data necessary for decision to include the jobs in training were collected for 288 jobs and task enumeration was completed for 115 jobs. The appendixes contain (1) a description of the general procedures used to select jobs, enumerate the tasks required in each job, and identify other important job requirements, (2) sample forms used in the behavior analysis process, (3) the general plan being followed in developing the guidance program, (4) a description of the present guidance program in the Quincy Public Schools, and (5) a list of the educators and scholars comprising an advisory panel to provide technical review, guidance, and counsel for the project. At its first meeting, this panel gave major consideration to defining instructional objectives. Other reports are available as VT 001 393-001 397, VT 004 848, and ED 013 318. (HC)

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FIRST QUARTERLY TECHNICAL REPORT

Project No. 5-0009

Contract No. OE-5-85-019

DEVELOPMENT AND EVALUATION OF AN EXPERIMENTAL CURRICULUM FOR THE NEW QUINCY (MASS.) VOCATIONAL-TECHNICAL SCHOOL

30 June 1965

U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
Bureau of Research

VT001392

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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The research reported herein was performed pursuant to a contract with the Office of Education, U. S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

American Institutes for Research
Pittsburgh, Pennsylvania

TABLE OF CONTENTS

	Page
FOREWORD	ii
PROJECT OVERVIEW	iii
REPORT SUMMARY	iv
TECHNICAL SCHEDULE	1
PROJECT ORGANIZATION	3
BEHAVIOR ANALYSIS	3
GUIDANCE PROGRAM	5
WORK OF THE ADVISORY PANEL	6
PLANS FOR NEXT QUARTER	7

APPENDIXES

APPENDIX A. Some Suggestions Concerning First Steps in Vocational Analysis

APPENDIX B. Forms Used for Collecting Job Data

APPENDIX C. Suggested Procedure for Development of Guidance Program

APPENDIX D. Quincy Public Schools Guidance Program: Secondary Schools

APPENDIX E. Advisory Panel Information

FOREWORD

This report, submitted in compliance with Article 3 of the contract, summarizes the technical progress of Project ABLE during its first quarter of operation, 1 April to 30 June 1965. A brief overview of the project is presented first. Then, following in order, are a report summary, a short review of project organization and schedules, discussions of specific technical topics and, finally, plans for next quarter. A number of appendixes supply details relevant to topics covered in the body of the report.

OVERVIEW: Project ABLE

A Joint Research Project of: Public Schools of Quincy, Massachusetts and American Institutes for Research

Title: DEVELOPMENT AND EVALUATION OF AN EXPERIMENTAL CURRICULUM FOR THE NEW QUINCY (MASS.) VOCATIONAL-TECHNICAL SCHOOL

Objectives: The principal goal of the project is to demonstrate increased effectiveness of instruction whose content is explicitly derived from analysis of desired behavior after graduation, and which, in addition, attempts to apply newly developed educational technology to the design, conduct, and evaluation of vocational education. Included in this new technology are methods of defining educational objectives, deriving topical content for courses, preparation of students in prerequisite knowledges and attitudes, individualizing instruction, measuring student achievement, and establishing a system for evaluating program results in terms of outcomes following graduation.

Procedure: The procedure begins with the collection of vocational information for representative jobs in eleven different vocational areas. Analysis will then be made of the performances required for job execution, resulting in descriptions of essential classes of performance which need to be learned. On the basis of this information, a panel of educational and vocational scholars will develop recommended objectives for a vocational curriculum which incorporates the goals of (1) vocational competence; (2) responsible citizenship; and (3) individual self-fulfillment. A curriculum then will be designed in topic form to provide for comprehensiveness, and also for flexibility of coverage, for each of the vocational areas. Guidance programs and prerequisite instruction to prepare junior high students also will be designed. Selection of instructional materials, methods, and aids, and design of materials, when required, will also be undertaken. An important step will be the development of performance measures tied to the objectives of instruction. Methods of instruction will be devised to make possible individualized student progression and selection of alternative programs, and teacher-training materials will be developed to accomplish inservice teacher education of Quincy School Personnel. A plan will be developed for conducting program evaluation not only in terms of end-of-year examinations, but also in terms of continuing follow-up of outcomes after graduation.

Time Schedule: Begin 1 April 1965

Complete 31 March 1970

Present Contract to 30 June 1966

REPORT SUMMARY

This report summarizes technical progress to 30 June 1965. Activity during this initial period has been concentrated in behavior analysis and guidance program development. Identification, selection, and description of jobs for inclusion in the training program has begun in nine vocational areas and significant progress has been achieved in five of the areas. The present Quincy guidance program has been described and guidance objectives to support the new curriculum are under development. In its first meeting 26 June, the Advisory Panel reviewed the aims, procedures, and expected outcomes of the project and agreed upon procedures for development of instructional objectives. It is expected that during the next quarterly period the behavior analysis will be substantially completed, analysis of requirements in mathematics and social studies will begin, instructional and guidance objectives will be prepared in first form for review by the Advisory Panel.

TECHNICAL SCHEDULE

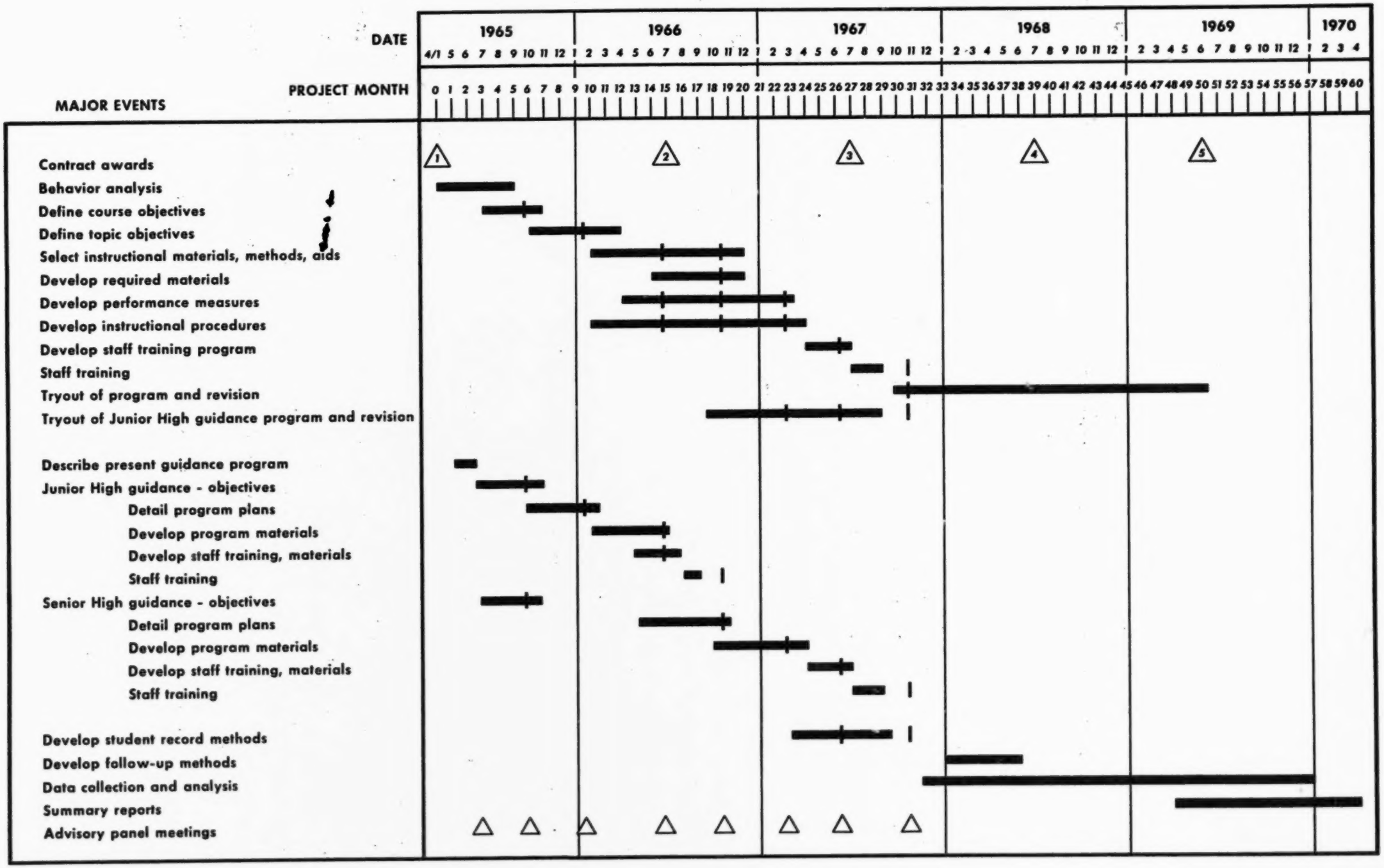
The project schedule is shown on the following page. This schedule lists all of the major technical events planned for the project and, thus, provides a convenient summary of the technical program plan.

During the present reporting period (Project Months 1-3), technical activity has conformed to the schedule which calls for behavior analysis in the curriculum development work, a description of the present guidance program, and the first meeting of the Advisory Panel. This report is devoted to discussion of these three topics primarily.

With completion of the analysis of competent behavior, emphasis in curriculum construction will shift to definition of course and topic objectives and then to development of instructional materials, methods and aids, and to design of performance measures. The next steps in guidance program development are the definition of specific objectives and the development of detailed plans and supporting materials for the Junior High School program. All of these activities will be well under way before the end of the present contract period.

Three observations regarding the project schedule should be made. First the dates assigned to contract awards are estimates based only on the assumption that the Office of Education will consider a 12-month contract period fiscally convenient. Second, the thin vertical lines through horizontal bars indicate points at which it is planned that the Advisory Panel will review the activity indicated. Thus, for example, the second Advisory Panel meeting will be concerned with objectives for courses of study and for both Junior and Senior High guidance programs. Finally, Advisory Panel meetings are shown only through November 1967 simply because it did not seem reasonable to forecast the meeting dates any farther in advance.

MASTER SCHEDULE: PROJECT ABLE


DATE
1965
4/1 5 6 7 8 9 10 11 12
1966
1 2 3 4 5 6 7 8 9 10 11 12
1967
1 2 3 4 5 6 7 8 9 10 11 12
1968
1 2 3 4 5 6 7 8 9 10 11 12
1969
1 2 3 4 5 6 7 8 9 10 11 12
1970
1 2 3 4
PROJECT MONTH
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
MAJOR EVENTS
1
2
3
4
5
Contract awards
Behavior analysis
Define course objectives
Define topic objectives
Select instructional materials, methods, aids
Develop required materials
Develop performance measures
Develop instructional procedures
Develop staff training program
Staff training
Tryout of program and revision
Tryout of Junior High guidance program and revision
Describe present guidance program
Junior High guidance - objectives
Detail program plans
Develop program materials
Develop staff training, materials
Staff training
Senior High guidance - objectives
Detail program plans
Develop program materials
Develop staff training, materials
Staff training
Develop student record methods
Develop follow-up methods
Data collection and analysis
Summary reports
Advisory panel meetings

PROJECT ORGANIZATION

Three elements of the organization affect the technical progress of the project. The project staff is responsible for performance of the research tasks. The project staff consists of four research specialists, including the project director, from A.I.R. and up to 16 educators from the Quincy Public Schools. The project director is responsible to a three-man policy committee which consists of the Superintendent of Schools, the Director of Research of A.I.R., and the Assistant Superintendent of Schools in charge of Vocational-Technical Education. Both the policy committee and the project director are provided with technical review and counsel by the Advisory Panel which consists of seven educators and scholars of national stature. All of these groups are staffed and functioning in the program.

BEHAVIOR ANALYSIS

A major requirement of the project plan is that objectives for courses and for topics within courses of study, be stated in specific operational terms and that objectives reflect the behaviors desired of the student when he has completed a particular course. To satisfy this requirement, the tasks performed by competent incumbents of jobs for which training is to be provided must be identified and the learnable skills and knowledges prerequisite to successful performance of those tasks must be defined.

Appendix A describes the general procedures used during the present reporting period to select jobs for inclusion in training, to enumerate the tasks required in each job, and to identify other important job requirements. Appendix B exhibits samples of the three detailed forms completed by coordinators in the process of identifying and selecting jobs and enumerating tasks.

During most of the present reporting period, analysis was done primarily in four vocational areas: electro-electronics, general piping, graphic and commercial arts, and metals and machines. During June, analysis began in five additional areas: power mechanics, computer data processing, business education, general woodworking, and home economics. A summary is presented below for the five vocational areas in which significant progress had been recorded by 15 June. This summary shows for each area the number of jobs identified as candidates for training development, the number of sub-families into which the candidates have been grouped because of task similarities, the number of jobs for which the data required to decide on inclusion have been gathered, and the number of jobs for which task enumerations are complete.

	IDENTIFICATIONS MADE		JOB DATA COLLECTED	
Vocational Areas:	Jobs	Sub-families	Selection Criteria	Tasks
Electro-electronics	169	2	23	40
General Piping	58	7	57	12
Graphic Arts	368	12	4	4
Metals and Machines	405	3	179	59
Computer Data Processing	51	6	25	--
	1051	30	288	115

Numbers of Jobs for which Identification, Selection, and Description Activities Were Complete as of 15 June 1965

As of about 15 June 1965, 1051 jobs had been identified as candidates for inclusion in the training program. These jobs had been grouped into 30 sub-families on the basis of task similarities. Data necessary to decide on including the job in training had been collected for 288 of the jobs and task enumeration was complete for 115 jobs.

A diagram showing the skill level and task content relationships between jobs is being developed for each vocational area as jobs are identified. This diagram is useful in verifying that a vocational area has been searched thoroughly for job types, in identifying jobs which have common task content, in establishing the relative skill and knowledge levels of jobs in the same progression, and in assuring that the set of jobs selected provides an adequate representation of the skills and knowledges required throughout the vocational area.

Coordinators in the four vocational areas listed first in the table above have started making the first selection of jobs for inclusion in the training development program and have begun the more detailed description of the selected jobs in accordance with the procedures of Appendix A.

GUIDANCE PROGRAM

Students who will be eligible for the first class entering the new vocational-technical curriculum in September 1967 now are entering eighth grade. New guidance programs are needed for these students no later than grade nine if the programs are to be reasonably useful to the students. Consequently, development of guidance programs was started in the first month of the project. A member of the Quincy Public School Guidance Department was assigned to the project half-time for the purpose of coordinating development of the new guidance programs. In addition, it is believed that by working together daily with the vocational coordinators, the guidance man can help assure the integration of instructional and guidance programs which is particularly important when instruction is individualized.

The general plan being followed in development of guidance programs is given in Appendix C. Step 1 in the plan requires a description of guidance as now provided in the Quincy Public Schools. Appendix D is a

draft of this description prepared by the Guidance Department. Attention now has turned to development of objectives for the guidance programs.

WORK OF THE ADVISORY PANEL

An advisory panel of seven distinguished educators and scholars has been formed to provide the project with technical review, guidance and counsel. The Advisory Panel met in Quincy for an all-day session on 26 June with key people from the Quincy Public Schools and from A.I.R. Appendix E presents a list of the Advisory Panel members, a list of participants in the 26 June meeting, and the agenda for that meeting.

A topic given major consideration by the Panel was the problem of defining instructional objectives. It was agreed that specific objectives are needed in four main areas and that the procedure for developing objectives in each area would be as follows:

1. Specific vocational objectives: to be obtained from analysis of occupations, to be summarized by the project staff, to be reviewed by Panel.

2. General vocational objectives: inputs to be accepted from the analysis of occupations, as well as from two A.I.R. projects now under way. One project attempts to define generalizable skills, the other to define general principles, attitudes concerning employment, career, etc. Summary of such information to be made by project staff, reviewed by Panel.

3. Citizenship objectives: to be based upon Panel discussion and revision of descriptions originally supplied by project staff. Some inputs probably will be available from another A.I.R. project.

4. Self-fulfillment objectives: to be derived as for citizenship.

The Advisory Panel also discussed the aims, procedures and desired outcomes of the project, commented on particular aspects of the project as planned, and made specific recommendations on curriculum and guidance. Minutes of the meeting are not available at this time because the meeting occurred so near the end of the reporting period. They will be available shortly and will be included with the progress letter for July.

PLANS FOR NEXT QUARTER

The following activities are planned for the quarter ending 30 September 1965:

1. Behavior analysis will continue in all nine vocational areas now active and analysis will begin in at least one additional area.
2. The selection of jobs to be included in the training curriculum and the full description of each of those jobs will be substantially complete in all active vocational areas.
3. Analysis of instructional requirements in mathematics and in social studies will begin.
4. The first selection of instructional objectives will be prepared for review by the Advisory Panel.
5. Proposed objectives for Junior and Senior High School guidance programs will be prepared for review by the Advisory Panel.

APPENDIX A

SOME SUGGESTIONS CONCERNING FIRST STEPS IN VOCATIONAL ANALYSIS

SOME SUGGESTIONS CONCERNING FIRST STEPS IN VOCATIONAL ANALYSIS

As described in the study proposal, our first major goal is a set of topic objectives and course objectives. It is planned that these objectives be derived from statements of the performances actually required by specific jobs and that the jobs shall be representative of the job families selected for emphasis in the Quincy program. The process of arriving at objectives may be indicated by the following list of intermediate steps.

1. Select job families for emphasis.
2. Select a set of representative jobs in each job family.
3. Describe each job.
4. Identify the tasks required in performance of each job.
5. Identify learnable skills and knowledges required for performance of each task and job.
6. Define objectives for training units or topics.
7. Define objectives for course.

Of course, more detail will be developed in the outline of each of these steps as work proceeds.

The first step, "Select Job Families," has been taken. The 11 job families chosen for emphasis in the Quincy program are listed on page 15 of the study proposal. This paper is concerned with steps 2-4, that is, with the selection and description of a set of representative jobs within each job family and with identification of the major tasks each job requires. Completion of the steps discussed in this paper is the preparation necessary for the description and analysis of tasks in terms of the learnable skills and knowledges the tasks require.

Job Selection

Three sources provide the principal data needed to identify the population of jobs within any job family. These are:

- The knowledge of the vocational area expert.
- Occupational Outlook Handbook (1963-64 edition) and sources referenced therein.
- Dictionary of Occupational Titles (latest edition).

Additional sources include the Position Classification Standards of the U. S. Civil Service Commission, the Wage Board Standards for civilian employees of the Air Force, Navy and Army, the local offices of the U. S. Employment Service, the State Employment Service, unions, trade associations, and industrial firms.

For any job family, these sources will provide a number of job titles which is much larger than the number of jobs for which it is possible, desirable, or necessary to develop vocational training within this program. Our purpose is to arrive at a smaller set of jobs which is representative of the job family. That is, the jobs selected should differ from one another in the performance they require and, taken as a group, should include substantially all of the learnable skills and knowledges which are both appropriate for the training programs and demanded by the job family. Final refinements in the selection of jobs will come after analysis of the specific performances, which are required. With this end result in mind, the following criteria and considerations are recommended for the initial selection. Jobs should be selected which:

1. In comparison with related jobs, require performances of a wider variety of tasks and a larger range of skill levels. Thus, the job of machinist might be chosen on this basis rather than the job of lathe operator since the machinist should be able to do the tasks of a lathe operator and some other tasks as well.

2. Require an appropriate amount of vocational training time. That is, jobs requiring only a very short period of training for most students

probably should not be listed. Similarly, jobs which require training time beyond that expected to be available in the Quincy program should not be included.

3. Have entrance, apprenticeship, or on-the-job training requirements which can be met better as a result of vocational training. Thus, jobs for which the training graduate could substantially meet the entrance requirements, or would be allowed to progress more rapidly through apprenticeship and additional training programs, would be favored for selection. Jobs which could be entered only after long service in another job, or only after an extended, fixed period of apprenticeship or additional training, or only by meeting requirements beyond the control of the training agency would be less desirable candidates for selection. This principle is <u>not</u> intended to imply that the content of vocational training should include only that which pays off immediately in a job. It <u>is</u> intended to foster meaningful and lasting vocational rewards for the student who performs successfully in training.

4. Are appropriate with respect to the cost, size, support requirements, and expected usage of training facilities and training equipment. This consideration may limit offerings in the computer data processing field, for example, to jobs not requiring frequent access to a large digital computer. It might permit training for jobs requiring use of less expensive equipment (key punch, sorters, tabulators, etc.). It might be possible to offer training for which facilities can be rented or even borrowed during the owner's off periods.

5. Are predictable with respect to the skills and knowledges which will be required in the next five years. Of course, radical changes may take place unexpectedly in any vocational area. If, however, an occupation is undergoing changes due, for example, to mechanization, introduction of new procedures, or revision of job structures, then effective training for that occupation may be changed radically. In such a case, training plans can be prepared when the performances, skills, and knowledges can be identified, but not before.

6. Have favorable employment expectations in the time period for which training is being prepared. Sources for data needed to evaluate future employment opportunities include:

- Occupational Outlook Handbook.
- U. S. Census of Population: 1960 (Occupation by Industry, PC (2) -7C).
- A.I.R Summary of National Employment Forecasts by Occupation and Industry. (See Appendix A)
- U. S. Census of Population: 1960 (State Reports and U. S. Summary, PC (1)-C and PC (1)-D series).

The first three of these references present data on a national basis. The last reference presents occupation by industry data in terms of intermediate occupation and intermediate industry groups for the country as a whole, for each state, and for standard metropolitan statistical areas of 250,000 or more. In addition to the sources above, information of particular significance for the employment area served by the Quincy vocational program may be available from state and local government offices.

Summary of Job Selection Data

The form shown in Figure 1 provides a convenient summary of relevant selection data and a checklist of considerations important in deciding whether to include a job in the sample. The entries required are those resulting from the six considerations discussed above. Sample entries have been made in Figure 1. The entries are not necessarily complete or fully accurate, but may serve to clarify use of the form.

First, note that one sheet should be completed for each job which has been selected. All data on the sheet refer to that job. With regard to specific line entries:

Job: Enter the name of the selected job. Where possible use a name from a standard source (e.g., Occupational Outlook Handbook) and give the source in parentheses. Where appropriate, also give a job code number (as in the Dictionary of Occupational Titles) or other identifying code. Identify the job code source if different from the name source.

Figure I

JOB SELECTION DATA

JOB: All-Round Machinist (O.O.H., D.O.T. Code 4-75.010 and .120)

JOB FAMILY: Metals and Machines

SUB-FAMILY:

PRINCIPAL LOWER LEVEL JOBS: Machine Tool Operators (O.O.H., D.O.T. 4-78.000 Thru .589 and D.O.T. 6-78.000 Thru .589)

PRE-EMPLOYMENT TRAINING TIME: 7-8 Years Total. 3 Years Vocational High School. 4 Years Apprenticeship Course (Typically 8,000 Hours Shop Training and 570 Hours Classroom)

EMPLOYMENT QUALIFICATION REQUIREMENTS: Usually training as above. Sometimes equivalent in experience, especially Military.

TRAINING FACILITIES REQUIRED: Heavy machines, expensive gages, large space with special power and heavy floor loading capability.

KNOWN CHANGES IN JOB REQUIREMENTS: Some conversion to numerically controlled machines (especially milling machines) emphasizes knowledge of materials and procedures rather than operating skill.

INDUSTRIES: Fabricated metal products; Primary metals; Electrical machinery; Transportation equipment; Railroad; Chemical; Food processing; Textile; Federal Government.

EMPLOYMENT OUTLOOK: Moderate increase nationally. 7000 jobs/year due to attrition. Additional due to expansion especially in maintenance.

Job Family: Enter the name given (on page 15 of the study proposal) to the job family (or vocational area) within which the selected job falls.

Sub-Family: For some job families, it may be convenient to group the jobs into sub-families. In other job families, there may be no necessity for this intermediate classification. If it is decided that sub-families should be identified, enter the name you select for the sub-family within which the job falls. Sub-families, when used, should group together jobs which are similar with respect to training requirements, whatever other reasons there may be for the grouping. Jobs in different sub-families must differ with respect to the specific things incumbents must be able to do and with respect to the training necessary to acquire this ability.

Principal Lower Level Jobs: Identify any jobs for which a student would acquire important qualifications by completion of some part of the training required for the job described above. Identification of the lower level jobs should be recorded as for the job described above.

Pre-employment Training Time: Enter the amount of training time now required to qualify for employment in the job. This entry should show total time and the amount of time required in each major kind of training. For example: "Four years total. Three years vocational school, one year OJT."

Employment Qualification Requirements: List the significant requirements for employment in the job. These requirements may include apprenticeship, age, experience in other jobs, etc.

Training Facilities Required: List the items requiring significant capital or support outlays. These are items which are expensive to buy, require large amounts of space, need significant maintenance provisions, etc.

Known Changes in Job Requirements: Describe any changes now occurring or which will occur soon to change the tasks performed by incumbents in this job.

Industries: List the industries which employ significant numbers of people in this job. Use the industry classification of the Occupational Outlook Handbook for this purpose if at all possible.

Employment Outlook: Summarize your findings with respect to employment possibilities in the area served by the Quincy vocational program. Remember that absolute numbers of job openings expected are the proper measure of employment opportunity, not percentage growth. Rate the outlook on a three-point scale: many, moderate, few.

General Job Description

When a job has been identified and tentatively selected for the training program, the next step is to prepare a document which gives a general description of the job. The purpose of job description in this study is to provide information which will be useful in defining the behaviors required of an incumbent. Analysis of the behaviors will then provide a basis for the crucial step of identifying learnable skills and knowledges.

This paper will make suggestions about procedures for describing jobs. The procedures will begin with general characteristics of the job and its place in the world of work, and proceed to record progressively more detailed information down to the identification and enumeration of tasks performed by an incumbent. The job description requires information in the following six areas which are discussed in more detail in the remainder of this paper:

1. Definition of the job population.
2. Statement of the mission.
3. Segments of the job.
4. Varieties of job functions.
5. Contingencies
6. Task identification and enumeration.

A completed general description of the auto mechanic's job is appended to this paper for reference and illustration. (See Appendix B)

Definition of the Population. The initial section of the job description attempts to distinguish the jobs to be included from those of similar title which are not included. The industries or locations of jobs are also identified. In addition, a brief general description is given of formal characteristics of job incumbents. Such characteristics may include such elements as: (1) qualification requirements such as examinations and certificates, (2) nature and duration of training, (3) sex and age distributions, and (4) average high school achievement.

Statement of Mission. This statement identifies the different purposes and modes of operation which influence performance of the job. This statement can sometimes define alternative objectives and operational modes as well as indicating, where appropriate, hierarchies of goals. The statement of mission sets, in a sense, the criteria by which one might want to judge performance of the job.

Segments. Job segments are the identifiable and meaningful time periods or the major steps in the regular sequence of job performance. This section of the general job description identifies what may be called the sub-operations of the mission, and serves as an important organization for the tasks which are later to be described. Segments are usually determined by the time phases which structure performance of the job, and in this sense they indicate the sequence in which the sub-operations of the job are performed. At the same time, they also identify these categories of operations themselves. As a simple example, the segments of a waiter's job may be described as follows: (1) setting tables, (2) taking orders for food and beverages from guests, (3) turning in orders to kitchen or counter, (4) assembling orders, (5) serving food, (6) preparing and tendering the bill.

Varieties of Job Functions. This section of the job description lists general functions or activities performed on the job. A function

is identified by an action verb and shows the worker's relationships to three components.

1. Objects or <u>things</u> such as equipment, tools, facilities.
2. Classes of <u>data</u> such as written instructions, quantitative and verbal information to be processed or communicated.
3. <u>People</u>.

The functions to be used in this section of the job description are defined in Appendix C. These are the functions established by the U. S. Employment Service for use in the Dictionary of Occupational Titles. Additional worker functions may be added if an appropriate definition cannot be found in Appendix C. If a new function is needed, its definition should be added to the present set and then used consistently.

<u>Contingencies</u>. This section of the general job description is devoted to an identification of the conditions under which the job is to be performed and the classes of unpredictable events or problems with which the worker might have to deal. Noteworthy conditions may include elements of either the physical or the organizational environment within which the job is to be performed. Contingencies have an aspect of danger, emergency, special challenge, or non-routine performance. Causes of contingencies may include such things as weather, accidents, illness, malfunctions.

<u>Task Identification and Enumeration</u>. A task is the smallest convenient unit of job activity having a separate purpose. It is a specific statement of action. Tasks are suggested throughout the process of preparing general job descriptions, particularly since this involves reviewing Department of Labor, union, association, industry, training, and guidance documents relating to each occupation. Defining the population helps to delineate the types of tasks which are and which are not applicable to the job being described. The statement of the mission or missions sets the objective toward which all tasks are aimed, either directly or indirectly. Each applicable function-component combination implies one or more task requirements. Segments can suggest both new varieties of tasks and ways

of organizing task enumerations to help systematize and ensure comprehensiveness. Contingencies and contexts can suggest additional, particularly non-routine, tasks.

Most complex jobs include tasks that seem not to be fruitful in deriving general skills. Identification of such tasks before they have been described in detail can avoid the expenditure of large amounts of time for such description. To aid in the identification of tasks to be and not to be described in detail, the following classification of tasks has been established:

1. Basic - Tasks closely related to the central purposes of the occupation and typically performed by new incumbents and/or most journeymen. This is the only type of task described in detail.

2. Specialty - Tasks performed by a small proportion of incumbents or only rarely performed and not closely related to the central purposes of the occupation. Specialty tasks are listed but not described.

3. Advanced - Tasks that require considerable specialized training and/or job experience for their performance and which are only performed by the most senior workers. Advanced tasks are listed but not described if all of the parts of the task which are not "advanced" are redundant to "basic" tasks.

4. Ancillary - Tasks for which no training beyond grammar school is required or likely to be useful. Ancillary tasks are listed, but not described.

5. Redundant - Tasks that are repeated during the course of performing the job in essentially the same way. Redundant tasks are described only once but variations required in repeated performance are noted.

APPENDIX A

SUMMARY OF NATIONAL EMPLOYMENT FORECASTS

BY OCCUPATION AND INDUSTRY

SUMMARY OF NATIONAL EMPLOYMENT FORECASTS

BY OCCUPATION AND INDUSTRY

Discussions with Bureau of Labor Statistics personnel suggested that the single best source of information to guide selection of jobs important for vocational education would be the Occupational Outlook Handbook, 1963-1964 edition. Accordingly, all industries and occupations in the Handbook were reviewed. Table 1 summarizes data on industry outlooks as given in the Handbook.

A preliminary selection of 84 occupations having significant potential vocational training implications was made and submitted to the Bureau of Labor Statistics. The Bureau both ranked and rated these occupations in terms of the number of openings likely to occur during the next decade. The rating was according to the three categories of (1) many opportunities, (2) a moderate number of opportunities, and (3) relatively few opportunities. Table 2 lists the 31 occupations that were rated as having relatively <u>few</u> opportunities. No further analysis has been made or is anticipated for these occupations.

Table 3 lists the 53 occupations rated as having <u>many</u> or a <u>moderate number</u> of opportunities and indicates the industries in which each occupation occurs.

The ratings of occupational outlooks must be used with caution since they involved a considerable subjective element due to missing data and a shortage of quantitative information about rates of employment change.

Table 1

Industry	Employed	Projected	Notes
Apparel	1960 1.24 Million	1976 1.33 Million	Increase in employment is expected to be moderate. Most of the employment opportunities will be in sewing machine operator jobs. Tailoring and other skilled occupations will show only a small increase
Communi-cation	1960 821,646	1975	Employment in the communication industry is expected to grow slowly. Most of the increased demand will be met by rising productivity rather than increase of workers.
Construction	1960 2.9 Million	1970 4.0 Million 1975 4.4 Million	Employment in the construction industry will rise at a rate much above the average for all nonfarm industries. Construction maintenance and repair is about one-third that of new construction and is expected to grow significantly during this period. Most rapid increases in employment are expected for asbestos & insulating workers; lathers; cement masons; glaziers; operating engineers; sheet-metal workers; and structural ornamental and reinforcing iron workers. Annual replacement needs range from 55,000 to 65,000 per year.
Electric Light and Power	1960 426,306	1975	Employment in this industry is expected to remain relatively stable, although the production of electricity will continue to increase. Employment is expected to decrease in generating, transmission and distribution operations but should increase in maintenance and repair occupations. Most of the employment will come about because of replacement needs.
Food and Lodging	1960 2,600,000	1975	Increase in employment is expected to be moderate for the industry as a whole. High employment demand for skilled cooks and restaurant managers. Turnover will account for most new jobs.

Table I Continued

Industry	Employed	Projected	Notes
Government	1960 8.5 Million	1970 11.0 Million 1975 12.8 Million	Nearly all of the increase in Government employment will be in State and Local Government agencies. Government employment is expected to increase by about one-third between 1960 and 1970.
Materials Manufacturing (Chemicals, Petroleum, Plastics, Paper Prod. and Proces)	1960	1975	Although this industry is expanding rapidly, employment is rising moderately. Most employment increases will be in the scientific and technical occupations. Among plant workers, the highest demand will be for skilled maintenance personnel.
Health and Welfare	1960 7,574,472	1975	Rapid expansion forseen in this industry as a result of population growth. Rapid employment increase in the technical occupations of this industry. 2 million in health occupations. 2 million in education occupations. 608,581 in welfare and religious occupations.
Equipment Manufacturing (Aerospace, automotive, electronics, appliance)	1960 6,375,000	1975	Employment increase is expected to be slow. Electrical machinery and instruments are growing rapidly while transportation is expected to decline.
Metal Production (mining, processing, fabrication	1960 3,066,000	1975 3,600,000	Employment in the Metals Production will increase very slowly. Employment in mining will decrease somewhat. Most employment increases are expected at the administration and professional level.
Maintenance and Repair	1960 2,750,000	1975	Maintenance and Repair is one of the fastest growing industries in the labor force. The fastest growing occupations in this industry are: a. Instrument Repairman b. Air Conditioning and Refrigeration mechanics c. Television and Radio Servicemen d. Appliance Serviceman

Table 1 Continued

Industry	Employed	Projected	Notes
Merchandising and Retail Trade	1960 11.4 Million	1970 14.0 Million 1975 15.6 Million	A large part of increased employment in this industry is expected to be among part-time workers. In 1960, almost 60% of all self-employed nonfarm proprietors were in this industry division.
Personal and Protective Services	1960 8,750,000	1975	Relatively rapid employment increase of protective service workers. Other service occupations will increase rapidly. Rapid employment increase for practical nurses and beauty operators; moderate increase for barbers.
Printing and Graphic Arts	1960 900,000	1976 1,250,000	Newspapers employ 340,000. Commercial establishments employ 280,000. Employment growth is expected to be moderate. Employment of skilled workers is expected to remain relatively stable. Replacement needs will be responsible for 5,000 to 6,000 jobs annually.
Transportation (Air, rail, bus, truck)	1960 2,739,399	1975	Employment in transportation is not expected to rise substantially. Employment in rail and water transportation is expected to decrease while air and truck transportation should increase.
Finance, Insurance, Real Estate	1960 2.7 Million	1970 3.5 Million 1975 3.9 Million	Banking is expected to have the most rapid employment growth. (1/4 of the workers in this industry are employed by banking institutions. Women comprise almost one half of industry's present employment.

Table 2

Occupations Judged to Have Relatively Few Employment Opportunities
(Listed According to the Estimated Number of Opportunities Anticipated)

Asbestos and Insulating Worker
Airplane Mechanic
Commercial Artist
Lather
Intercity Bus Driver, and Local Transit Bus Driver
Lithographer
Plasterer
Setup-Man (Machine Tools)
Dental Lab. Technician
Chemical Technician
Glazier
Central Office Repairman, and Central Office Installer
Typewriter Serviceman
Telephone Operator
Aeronautical Technician
Metallurgical Technician
Cash Register Serviceman, Calculating Machine Serviceman, and Adding Machine Serviceman
Broadcast Technician
Data Processing Equipment Serviceman
Dental Hygienist
Cabinet Maker
Physical Therapist
Boiler Maker
Refinery Mechanic
Duplication and Bookkeeping Machine Serviceman
Accounting and Bookkeeping Machine Serviceman
Dictation Machine Serviceman

APPENDIX B

GENERAL JOB DESCRIPTION

Auto Mechanic

AUTO MECHANIC

A. Defining the Population

The majority of auto mechanics are employed in repair shops in which all types of automotive maintenance and repair operations are performed and in service departments of new and used automobile dealers. Included in this definition also are those mechanics employed by government agencies, and establishment relying heavily on automotive or truck transportation i.e. bakeries, dairies and truck, taxicab and bus companies.

Excluded from this definition are:

1. Body and fender repairmen who are primarily concerned with shaping, finishing and replacing of sheet metal and replacing of trim and glass on motor vehicles.
2. Repairmen who perform only such specialty tasks as transmission, radiator, steering, electrical or air suspension repair.
3. Repairmen who perform machining operations such as grinding crankshafts and camshafts and machining various automotive parts.

B. Statement of Mission

The primary missions of the auto mechanic are:

1. Maintenance of motor vehicles
2. Repair of motor vehicles

Other, secondary, missions are listed below:

1. Estimating costs of repair
2. Advising customers in purchase, operation and maintenance of motor vehicles
3. Purchasing replacement parts

C. Functions and Components of Functions

Things	Data	People
Handling	Computing	Taking Instructions -
Manipulating	Compiling	Helping
Operating - Controlling	Analyzing	Exchanging Information
Precision Working		

The things the auto mechanic handles and manipulates are various hand tools and automotive parts and components. He operates-controls various test and service equipment. He must be able to make precise measurements and adjustments. The data functions with which the auto mechanic is concerned are computing costs of repairs, compiling various types of information obtained from inspections of motor vehicles and analyzing data in order to determine what necessary actions are to be taken to complete his mission. The mechanic's relation with people involve taking instructions or receiving information from supervisors and/or customers, helping fellow workers when necessary, and speaking to and signalling fellow workers or customers in order to convey information to them.

D. Segments

The main steps involved in the occupation of auto mechanic are: Diagnosis of automotive malfunctions, location of malfunctions and repair or adjustment of automobiles or trucks.

E. Contingencies and Contexts

1. May have to fabricate a replacement part (such as a gasket) when correct type is not available.
2. May have to improvise a tool when the tool ordinarily used is not available e.g. using standard wrenches when metric wrenches are not available.

3. Substitutes floor jacks in raising motor vehicles when hydraulic lift is inoperative.

4. May have to make emergency repairs on a vehicle on the road, if it cannot be towed to the repair shop.

5. May instruct customer over the phone about what to do when his vehicle is either broken down or malfunctioning (in order the customer be able to drive the vehicle to the repair shop).

Job contexts for the auto mechanic are quite varied, depending upon the situation in which he finds himself e.g. working in the service department of a new and/or used automobile dealer or in a small private repair shop. Very often, those working in establishments which employ a number of auto mechanics specialize in the repair and maintenance of particular makes and models of motor vehicles or particular systems of motor vehicles (such as electrical or ignition systems). On the other hand, those working on private or small repair shops may have to deal with many makes and models. The latter situation also requires the auto mechanic to perform tasks not directly related to the occupation such as ordering parts and executing other clerical duties which are generally carried out by the service manager in larger establishments. In addition, mechanics working in larger establishments have the advantage of working with highly specialized tools and testing equipment. Mechanics employed by establishments which operate fleets of trucks or automobiles e.g. truck or taxi companies are required to perform volume maintenance and repair work. They may also be required to perform such tasks as refueling and cleaning motor vehicles.

F. Task Classification

a. Basic Tasks

1. Diagnosis vehicle malfunctions
2. Tests electrical system
3. Tests ignition system

4. Tests fuel system
5. Tests cooling system
6. Tests lubrication system
7. Tests engine
8. Tests transmission
9. Tests steering system
10. Tests braking system
11. Checks suspension system
12. Checks exhaust system
13. Checks differential assembly
14. Removes engine
15. Removes engine accessories
16. Engine disassembly
17. Repairs cylinder head
18. Repairs oil pan
19. Removes cylinder ridge
20. Disassembles piston and connecting rod assembly
21. Repairs electrical system
22. Repairs ignition system
23. Repairs fuel system
24. Repairs engine
25. Assembles engine
26. Installs accessories
27. Installs engine
28. Services steering system
29. Services braking system
30. Services suspension system
31. Services exhaust system
32. Lubricates chassis
33. Tunes engine
34. Estimates costs of repair

b. Specialty Tasks

1. Transmission repair (Standard & automatic transmissions)
2. Steering system repair (Mechanical & power steering)
3. Cooling system repair
4. Air suspension repair
5. Power accessory repair
6. Most machining operations

c. Advanced Tasks

1. Rebuilding and overhaul of various automotive components
2. Modification of motor vehicles

d. Ancillary Tasks

1. Cleaning various components and parts
2. Most replacement tasks (these consist of removing or unfastening the component or part to be replaced and installing [reverse of removing] the replacement part or component)

e. Redundant Tasks

1. Removal of nuts, bolts and screws
2. Removal of valves, piston and connecting rod assemblies, main bearings, wheels, etc.
3. Replacement or installation of the above mentioned components and parts

APPENDIX C

DEFINITIONS OF JOB FUNCTIONS

DEFINITIONS OF JOB FUNCTIONS

All activities of a job involve a relationship to things, to data, and to people in some degree. The relationships which a worker has to each of these components can be defined as functions particular to that component and thus characterize his activities. The definitions of job functions are, therefore, grouped by component. Functions carried out with things are defined first. Functions carried out with data are defined second. Functions carried out with respect to people are defined last.

Observing and learning are involved in all other functions. Consequently, neither is to be found in the lists which follow and neither need be included in the job description.

THINGS FUNCTIONS

Handling

Using body members, hand tools, and/or special devices to work, move or carry objects or materials and involving little or no latitude for judgment with regard to attainment of standards or in selecting appropriate tool, object, or material. Examples include situations that involve a small number of special tools fairly obvious as to purpose, such as a broom, a special purpose end wrench, grass shears, go no-go gauges. Dimensional precision can vary from rough to fine, being built into the structure of the task(s).

Tending

Starting, stopping, and observing (also, where necessary, feeding or off-bearing material or product) the functioning of machines and equipment. Tending involves adjusting material or controls of the machine, such as changing guides, adjusting timers and temperature gauges, turning valves to allow flow of materials, flipping switches in response to lights or needle indicators. Judgment involved in making these adjustments may be a little more difficult than for Handling, particularly if worker is machine paced. However, built-in guides facilitate the use of judgment; responsibility is usually greater because of cost of machine or equipment.

Manipulating

Using body members, tools, or special devices to work, move, guide, or place or measure objects or materials, and involving some latitude for judgment with regard to precision attained and selecting appropriate tool, object, or material although this is readily manifest, e.g., rough breadboarding and unit testing (bench trial and error) to check-out element and component values. Finish and appearance of breadboards not primary objective. Dimensional precision can vary from rough to fine, being a function of tools and technology.

APPENDIX B

FORMS USED FOR COLLECTING JOB DATA

FORMS USED FOR COLLECTING JOB DATA

Three forms have been adopted for collecting data to be used in selecting jobs to be included in the training curricula and to describe those jobs. Examples of these forms appear on the next three pages in the order described here. The examples shown are only partially complete.

1. Form 1 is designed to be used in listing jobs identified as being in the area under consideration by each of the coordinators. Provision is made for simply checking whether or not each job listed should be selected for more detailed description according to criteria supplied the coordinator and described in the document in Appendix A. The last column headed "Reason" provides space for indicating by code numbers the reasons for rejecting a job if it has been rejected.

2. Form 2 is designed to provide information needed to further screen and reduce the number of jobs to be included for complete description and inclusion in the training program. The form as it appears here is a revision of the form suggested in the document in Appendix A. Specifications of the information to be recorded on the form also appear in that document.

3. Form 3 provides space for listing tasks associated with each of the jobs described on Form 2. Provision is made for classifying tasks into categories suggested in the document mentioned above. The third and final column will be used in analysis to be conducted in subsequent phases of the project.

3 - Electro-electronics (Electronics)

	1. JOB NAME	2. SELECT Yes	2. SELECT No	3. REASON
1.	Electronic Technician			
2.	Wireman	✓		
3.	Senior Test Technician			
4.	Test Technician			
5.	Electro-Mechanic Assembler			
6.	Electrical Wireman			
7.	Apprentice Electronics Technician			
8.	Repair Technician			
9.	Wireman Assembler			
10.	Panel Assembler			
11.	Construction Technician			
12.	Environmental Technician			
13.	T.V. Serviceman			
14.	Senior Test Equipment Technician			
15.	Appliance Technician			
16.	Special Equipment Wireman			
17.	Field Technician			
18.	Electronic Assembler			
19.	Electronic Circuit Technician			
20.	Meter Technician			
21.	Microwave Technician			
22.	Communication Technician			

Accept Reject

1. JOB FAMILY	2. COORDINATOR(S)	3. DATE
Electro-electronics	D. R. Kaupp	5/20/65

4. SUBFAMILY	6. LOWER LEVEL JOBS
Electronics	None
5. JOB NAME Wireman 5a. EQUIVALENT NAMES May be combined with Assembler and/or Solderer	

7. PRE-EMPLOYMENT TRAINING TIME (Beyond 8th Grade)

ACADEMIC	VOC-TECH TRNG.	MILITARY EXP.	INDUSTRIAL EXP.
None	6 months	None	1 month

8. EMPLOYMENT QUALIFICATION REQUIREMENTS

PHYSICAL	LEGAL	TOTAL TRNG.	OTHER
Normal	None	7 months	

9. TRAINING FACILITIES REQUIRED Government, NASA, and a variety of commercial specifications as well as standard tools and equipment of the trade.

10. INDUSTRIES USERS All electronic manufacturing companies.

11. KNOWN CHANGES IN JOB REQUIREMENTS Increasing emphasis on miniaturization and solid state circuitry.

12. EMPLOYMENT OUTLOOK Local	National
Always in demand as this job function is fundamental to all production of electronic equipment. Demand expected to rise continually through next five years (Occupational Outlook Handbook 1963, p. 587).	Same as local.

3 - Electro-electronics (Electronics)

	1. TASK NAME (Wireman)	2. TYPE	3. CODE
	All tasks of the Solderer plus the following:		
1.	Stripping Wires & Cables		
2.	Uses Crimping Tool		
3.	Cables		
4.	Makes Wiring Harnesses		
5.	Makes Wrap Connections		
6.	Makes Screw Connections		
7.	Pulls Cables & Wires		
8.	Mounts Components		
9.	Reads Schematics Layouts		
10.	Reads Color Codes		
11.	Makes Continuity Checks		
12.	Selects Wires & Cables		
13.	Measures Wire Lengths		
14.	Installs Electrical Hardware		
15.	Insulates Wires		
16.	Cuts Wires		
17.	Reads Run Sheets, Specifications Sheets		

APPENDIX C

SUGGESTED PROCEDURE FOR DEVELOPMENT OF GUIDANCE PROGRAM

SUGGESTED PROCEDURE FOR DEVELOPMENT OF GUIDANCE PROGRAM

1. Describe the Guidance Program as It Now Exists in the Quincy Public Schools.

   This description should be in report form suitable for inclusion as a section or as an appendix in our quarterly report due 30 June 1965. The report should be complete, but concise. Suggest that it be organized around a set of specific objectives, so that the report describes Quincy methods for meeting each objective. It is important that this report be systematic, objective, and factual. It provides the basis for all that follows.

2. Define Specific Objectives and Requirements for a Guidance Program Adequate to the New School Program.

   This step is analogous to the statement of curriculum objectives. That is, objectives must be stated in terms which permit their achievement to be evaluated as directly as possible. Two major problems to be solved are: (a) providing pre-entry guidance for Jr. High students, and (b) providing effective guidance to students after they enter the new curriculum. It is important that objectives be established which will assure that Jr. High students are informed about the new opportunities and that substantial numbers of them apply for entry into the new curriculum. For students enrolled in the new curriculum, it is important that objectives be established which lead to means for handling the very different guidance problems associated with individualized instruction and progress. Objectives for the guidance program will be discussed with the Advisory Panel just as curriculum objectives will be. First discussions with the panel should be scheduled for the second

meeting, probably in September 1965. A progress report on objectives of the guidance program is needed for our second quarterly report due 30 September 1965.

3. Define a Plan for Meeting Each Program Objective.

This is the heart of the new program development. Plans should be specific. That is, they should define actions to be taken, identify the person(s) by whom the action is required, specify dates, methods, and materials. This is the program except for the actual materials to be used.

Probably, much of the present guidance program can be used unchanged, especially for Jr. High students. As much of the present system as can be used as is, or with limited modification, should be incorporated in the new system. It is expected, however, that the new school situation and the analyses done in 1 and 2 above will require development of some new methods and techniques. When they are needed, new program elements should be incorporated without hesitation.

Priority in this work probably must go to the Jr. High guidance program since it must be installed by September 1966 which is a year before the new school is opened. Plans for the Jr. High program should be presented to the Advisory Panel's third meeting, probably in January 1966. A progress report on objectives and on program plans is needed for our third quarterly report due 31 December 1965.

4. Develop Plan for Training Couselors and Teachers.

Actually, this step is properly part of step 3. It is listed separately for emphasis and to point out that this training comes prior to installation of the guidance program for students. Jr. High counselors' and teachers' training must be completed prior to school in September 1966. Thus, the training must be arranged for and conducted either during the 1965-1966 school year or during the summer of 1966. Jr. High staff training plans should be presented to the Advisory Panel's fourth

meeting and reported, substantially complete, in the 31 March 1966 quarterly report. Senior High staff training can follow Jr. High staff training by as much as a year. However, it is expected that the high school program will be quite different from anything which now exists, will require much cooperative planning by those concerned with counseling and those concerned with curriculum and administration, and will require more staff training time. Plans for Senior High staff training should be presented to the Advisory Panel's sixth meeting, probably in February 1967. Progress on Senior High plans should be covered in our quarterly reports beginning as early as information is available.

5. Develop Materials to Support Staff Training and the Guidance Program.

As with steps 3 and 4, the Jr. High materials must have priority because of schedule. Jr. High materials for staff training must be complete by June 1966, or earlier if training is scheduled before summer 1966. Guidance program materials should be ready in time for staff training if at all possible. Jr. High training and program materials should be reviewed by the Advisory Panel no later than their fourth meeting, probably in June 1966, and should be fully reported in our quarterly report due 30 June 1966. Senior High staff materials should be presented to the Advisory Panel's sixth meeting, probably in February 1967. Senior High guidance program materials should be reviewed by the Advisory Panel no later than their seventh meeting, probably in May 1967 and fully reported in our quarterly report due 30 June 1967.

6. Install and Try Out Guidance Programs.

Specific plans must be prepared for the installation of guidance programs. It is important that procedures be provided whereby necessary or desirable alterations in the programs are promptly

detected, effected, and documented. Plans for installation and tryout should be part of and follow the schedules of step 3.

7. Program Evaluation.

One unique aspect of the Quincy program is the requirement for objective program evaluation. This means that procedures must be devised whereby the effects of the guidance program are evaluated in objective terms. Data for this evaluation must be defined in advance of program installation, collected from the time of installation, and reported in our regular report series. One reason for insisting on specific, measurable objectives is that this is the only kind of objective for which achievement can be measured. To some extent, the evaluation program is defined when program objectives are stated. Nevertheless, a formal plan for program evaluation must be prepared, reviewed by the Advisory Panel, executed, and fully reported in our final report. Consideration should be given to evaluation data available during tryout years and to follow-up data from graduates.

APPENDIX D

QUINCY PUBLIC SCHOOLS

GUIDANCE PROGRAM: SECONDARY SCHOOLS

QUINCY PUBLIC SCHOOLS

GUIDANCE PROGRAM: SECONDARY SCHOOLS
April 1965

PHILOSOPHY - In Quincy, guidance is defined as an effort to help students utilize meaningfully what they have within themselves and what they can acquire from their environment so that their individual development may be enhanced and maximum contributions to society made possible.

OBJECTIVES AND FUNCTIONS

A. GENERAL

Through specified staff functions, guidance seeks to extend awareness of own potential and knowledge of opportunities, to assist students in self-understanding and planning, and insofar as possible to eliminate impedimentia to learning. Desired outcomes in terms of the individuals served include personal growth and meaningful self-direction; maximum accomplishment and commitment.

B. SPECIFIC

At the secondary level, formal guidance service is rendered through designated, qualified counseling personnel with involvement as appropriate of mental health consultants, headquarters guidance staff members, and other resource persons available on a city-wide basis.

The objectives of the guidance program may be categorized in several general areas. Within each of these areas, more specific objectives and the guidance functions associated with them are identified.

Assisting Students in Decision-making and Preparing Students to Make their Own Choice

Specific Objectives	Guidance Functions
To provide appropriate assistance for each student in terms of his needs in making important decisions in relation to career selections and in resolving his problems.	Interviews with individual students for purposes of inquiry, information-giving discussion concerning progress, adjustment, potential, educational-vocational goals.
When confronted with making a decision as to further education or immediate entry into a vocation, the technical secondary school student is able to make his own choice using his knowledge of his personal achievements, specific aptitudes, interests, and deficiencies in terms of educational/training prerequisites and vocational information.	Interpretation of test and achievement data to individual students and parents with emphasis upon strengths and implications for action.
	Assistance to individual students and parents in curriculum choice, in long-range planning, in obtaining scholarship aid.
	Arrangement for and/or conduct vocational exploration through interviews, visits, guided independent study, career Big Brother, work experience.
	Placement of students in cooperation with other departments within the school for group placement, job placement, school and college placement.
	Involvement of counselees in guidance activities including panels, seminars, dialogues, vocational interviews, field trips, orientation programs for younger students.
	Promotion of student interest in and use of guidance reference materials and self-administering guidance aids including listening posts, other special devices (e.g., college view deck).
	Collaboration in school effort to highlight for students and the community the significance of automation, and the implications for education.
	Supportive counseling with selected students directed toward specific goals.

Testing and Record Keeping

Specific Objectives	Guidance Functions
To use standard tests and other valid measurement instruments and techniques to procure essential information on each student's progress, status and learning potential.	Obtaining and supplying data concerning individual counselees including: new enrollees; graduates, transfers, terminal prior to graduation; follow-up of graduates and drop-outs; data compilation, analysis and interpretation.
To compile, interpret, and record estimates of each student's aptitudes, achievements, interests, as well as personal/social assets and deficiencies at regular intervals during his enrollment in school.	Study of test ratings, term marks, cumulative records, school staff, reports: consolidate, interpret, record.
	Responsibility for aptitude and interest testing followed by group discussion on testing and test ratings.

Utilizing Special Services

Specific Objective

To use, or cause to be used, all available special services in relation to student personal adjustment, social adaptation, and career selection at appropriate times and places.

Guidance Functions

Collaboration with health service and involvement of teaching personnel in work with individual situations as appropriate.

Preparation of case material for Preview Conference with mental health consultant and headquarters guidance staff member serving the school.

Preparation of request forms for psychological evaluation; for investigation, leading to other than school agency referral if indicated.

Placement of students in cooperation with other departments within the school for group placement, job placement, and school and college placement.

Large-group and special interest programs with use of student participants, guest speakers, and panelists, including use of resource persons including mental health consultants, guidance department college consultants, representatives from business, industry educational institutions, armed services.

Communicating Information to Students and Parents

Specific Objectives	Guidance Functions
To communicate essential information and assistance to each student and his parents, at least once each year, what is known of his learning potential, growth, development, and noted special needs.	Conferences with parents. Interpretation of test and achievement data to individual students and parents with emphasis upon strengths and implications for action.
To provide information to students and their parents to facilitate the transition from the elementary school to junior high school, from junior high school to senior high school, and from senior high school and trade school to vocational life or higher education or training institutions.	Assistance to individual students and parents in curriculum choice, in long-range planning and in obtaining scholarship aid. Arrange for and conduct vocational exploration through interviews, visits, guided independent study, career Big Brother, work experience.
To provide student knowledge of typical vocations, prerequisition for entry, and characteristics of at least three job fields.	College and school visits, staff-field trips to business and industry, local conferences to obtain information concerning educational and vocational opportunities, requirements, and trends.
To provide students with general information concerning the changing world and the implications of modifications for vocational choice, adaptation, wholesome living, and responsibility as a citizen.	Presentation of information regarding achievement-motivation, psychology of learning, human behavior, self-understanding, the changing world, career opportunities, colleges and college entrance, technical and other post high school programs, military service employment. Provision of orientation programs and activities including student handbook and pre-orientation programs in schools. Setting up of parent programs to present information pertinent to guidance services and resources.

Assisting and Advising Administrative Staff

Specific Objectives	Guidance Functions
To provide assistance for the supervisory staff and faculty to prevent, recognize, and assist in correcting student adjustment problem situation.	Communication between couselor staff and faculty members concerning individual students.
To advise the Superintendent of Schools concerning conditions and school policies conducive to student mental health and optimal student performance.	Collaboration with administration persons in the investigation and handling of individual unusual situations in school adjustment or placement.
	Preparation of case material for Preview Conference with mental health consultant and headquarters guidance staff member serving the school.
	Preparation of case material for Review Board at main office level and participation in session.

Serving as Liaison between Teachers, Parents, other School Units and Community

Specific Objectives	Guidance Functions
To establish, maintain, and enhance liaison with the teachers and parents of each student who manifests need for special attention due to impaired physical or intellectual function, unwholesome behavior, unhealthy emotional patterns, or ineffective learning performance.	Obtaining and supplying data concerning individual counselees; including new enrollees; graduates, transfers, terminal prior to graduation; follow-up of graduates and drop-outs; data compilation, analysis, and interpretation.
	Communication between counselor, staff and faculty members concerning individual students.
To compile appropriate records and forward essential information to institutions of higher learning on each student who plans further education or training.	Conferences with parents.
	Discussion of school offerings with groups of students and parents.
	The feeding back of significant information to appropriate persons and making recommendations based on observations and findings.

GENERAL COUNSELOR ACTIVITIES

1. The promotion of guidance service.
2. Participation in an on-going program of in-service training including
   a. On-the-job training in case-handling.
   b. Selection and development of guidance materials and programs.
   c. Seminars, special conferences, department meetings.
   d. Committee activities surveys.
   e. Interviews, visits, field-trips.
3. Availability after school hours, with special provisions for parent conferences.
4. Collaboration with other school units to insure continuity in the progress of a child through the school system.
5. Research for new ideas and techniques to better serve counselees.
6. Involvement in pilot projects, leadership-action programs.

SUMMARY - The over-all objective of guidance service is to contribute to the motivation and adequacy of each student to meet the challenges and to cope constructively with the tasks, stresses, and choices with which he is confronted.

The guidance program in Quincy is a dynamically evolving program, continually attempting to determine its impact. It is continually changing in light of changing student needs in a changing world.

APPENDIX E

ADVISORY PANEL INFORMATION

PROJECT ABLE ADVISORY PANEL

Dr. Handen L. Forkner New York City	Business Education
Mr. Richard B. Ford Carnegie Institute of Technology	Social Studies
Miss Anne Donovan U. S. Office of Education	Women's Vocational Education
Mr. Norman C. Harris University of Michigan	Vocational Education; Mathematics; Science
Professor Gyorgy Kepes Massachusetts Institute of Technology	Arts
Dr. Joseph T. Nerden North Carolina State College	Vocational Education
Dr. Erwin R. Steinberg Carnegie Institute of Technology	English

PARTICIPANTS

Project ABLE Advisory Panel Meeting

Advisory Panel Members

Miss Anne Donovan	U. S. Office of Education
Mr. Richard B. Ford	Carnegie Institute of Technology
Mr. Norman C. Harris	University of Michigan
Dr. Joseph T. Nerden	North Carolina State College
Dr. Erwin R. Steinberg	Carnegie Institute of Technology

Quincy Public Schools

Mr. Robert E. Pruitt	Superintendent
Mr. Maurice J. Daly	Assistant Superintendent
Mr. Lloyd M. Creighton	Principal, Quincy High School
Mr. John W. Walsh	Principal, North Quincy High School

American Institutes for Research

Dr. Robert M. Gagne′	Director of Research
Dr. Edward J. Morrison	Project Director

AGENDA

Meeting of Advisory Panel--Project ABLE

Quincy, Massachusetts--26 June 1965

0900	Meeting called to order Robert M. Gagné, Chairman
0905	Welcoming Remarks Background and Goals for the project in relation to the Quincy Schools Robert E. Pruitt, Superintendent
0930	An overview of the projects objectives, procedures, and outcomes Edward J. Morrison, Project Director
1000	Discussion of the Project
1200	Lunch
1330	Reconvene Administrative matters Time of future meeting
1345	The problem of defining objectives
1400	Discussion
1600	Adjournment